CLAIMS

1) Method of estimating a downlink channel between a base station and a mobile terminal in a mobile telecommunication system, characterised in that the said base station estimates the uplink channel between the said mobile terminal and the said base station, deduces, from the variations in the uplink channel, those in the downlink channel and estimates at a second instant the said downlink channel from an initial estimation at a first instant and variations in the said downlink channel between the said first and second instants.

2) Estimation method according to Claim 1, characterised in that the initial estimation of the downlink channel is obtained by the mobile terminal and transmitted by it to the base station.

3) Estimation method according to Claim 1 or 2, characterised in that the estimation of the uplink channel comprises, for each propagation path (i) of the said channel, the estimation of a first complex multiplicative coefficient (c_i^u) representing the attenuation and phase rotation undergone by a signal at a first frequency (f_u) propagating on the said path and in that the estimation of the downlink channel comprises, for each of the same paths, the estimation of a second complex multiplicative coefficient (c_i^d) representing the attenuation and phase rotation undergone by a signal at a second frequency (f_d) propagating on the said path..

4) Estimation method according to Claim 3, characterised in that, for a given path (i) and a given interval of time (Δt), the variation in the second complex multiplicative coefficient (Δc_i^d) during the said interval of time is calculated from the variation in the first complex multiplicative coefficient (Δc_i^u) during the said interval of time according to: $\Delta c_i^d / c_i^d = f_d / f_u . \Delta c_i^u / c_i^u$.

5) Estimation method according to Claim 4, characterised in that the second complex multiplicative coefficients (c_i^d) of the different paths are obtained by adding over time their respective variations (Δc_i^d) and initial values ($c_i^d(0)$) transmitted by the mobile terminal.

6) Estimation method according to Claim 1 or 2, characterised in that the estimation of the uplink channel comprises, for each direction (θ_k) belonging to a plurality (N) of directions angularly sampling a zone served by the said base station, the estimation of a first complex multiplicative coefficient (c_k^u) representing the attenuation and phase rotation undergone by a signal at a first frequency (f_u), transmitted by the mobile terminal and arriving at the said base station substantially in the said direction, and in that the estimation of the downlink channel comprises, for each of the said directions (θ_k), the estimation of a second complex multiplicative coefficient (c_k^d) representing the attenuation and phase rotation undergone by a signal at a second frequency (f_d) transmitted by the said base station in this direction to the said mobile terminal.

7) Estimation method according to Claim 6, characterised in that, for a given direction (θ_k) and a given interval of time (Δt), the variation in the second complex multiplicative coefficient (Δc_k^d) during the said interval of time is calculated from the variation in the first complex multiplicative coefficient (Δc_k^u) during the said interval of time according to: $\Delta c_k^d / c_k^d = f_d / f_u . \Delta c_k^u / c_k^u$.

8) Estimation method according to Claim 7, characterised in that the second complex multiplicative coefficients (c_k^d) in the different directions are obtained by adding over time their respective variations (Δc_k^d) and initial values ($c_k^d(0)$) transmitted by the mobile terminal.

9) Device for estimating a downlink channel intended to be mounted in a base station of a mobile telecommunication system, characterised in that is comprises means for implementing the method according one of the preceding claims.